INDUSTRIAL DIVERSITY AND ECONOMIC PERFORMANCE
IN U.S. AREAS

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Abstract

It has often been suggested that economic diversity enhances economic performance, either by promoting higher levels of economic well-being or by improving the ability of regions to cushion the adverse effects of economic cycles. This is the conventional wisdom, but it has not been adequately tested. This study undertakes an investigation of the various aspects of economic diversity to determine whether support can be found for these assumptions by testing them with data from the 50 states and the District of Columbia for the ten-year period from 1972 to 1981. The results suggest that no strict assumptions should be made regarding a clear relationship between economic diversity and growth and stability of unemployment, and per capita income-based measure of economic performance.

I. Introduction

The advantages of diversity have been argued and analyzed in the regional economics literature [11, 16]. Specifically, regional business cycle theorists have debated the thesis that as a region's industrial structure becomes more diversified, its economy becomes less responsive to fluctuation caused by changes in extra-regional economic factors [17, 22]. This view is closely related to the widely-held assumption that economic diversity enhances economic performance, the latter being measured by growth rate, per capita income, unemployment rate, or other indicators.

This assumption is the "conventional wisdom," but it has not been adequately tested, although some attempts have been made to relate the index of diversity to certain indicators of economic performance [15, 23, 3].

The interest in economic diversification is a nationwide phenomenon. Planning agencies of local governments have attempted to reap the benefits of additional economic activities by adopting policies which stimulate the location of new or relocated activities within a specific region. These policies might
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range from providing information on locational characteristics of an area to tax exemptions for newly locating or expanding industries. As noted by Conroy [4], as of 1971, there were no fewer than 4,513 different organizations actively involved in "industrial development." The majority of them seeking to attract new or expanded industry to specific, very limited geographic areas.

Conroy additionally points out that 42 of the 50 states approved revenue bonds for financing new industries. In 42 states, there existed city- and/or county-owned industrial parks; in 21 states, corporate income tax exemptions were available to new industries; and in 12 states, cities and counties provided free land to newcomers.

This study undertakes an investigation of the various aspects of economic diversity to determine whether support can be found for some of the generally-held assumptions regarding its value. These assumptions are tested with data from the states of the U.S. for the ten-year period, 1972-1981. Such an investigation should provide insight into the patterns of growth and sources of cyclical instability of the units (states) during the period of study. This, in turn, may offer both a conceptual and a historical perspective for decision-makers responsible for formulating policies for economic recovery.

Section II presents the research methodology and summarizes the hypotheses. Section III presents an empirical investigation of the strength of relationships between employment-based diversity and levels, rates of growth and cyclical fluctuation of unemployment and income. Finally, a brief concluding section summarizes the results.

II. Research Methodology

Measure of Diversity

In the academic literature, the subject of diversification has been hindered by the problem of defining regional diversity in a theoretically meaningful way and then of measuring and expressing relative diversity quantitatively. Diversity has been defined as "the presence in an area of a great number of different types of industries" [23, p. 16], or as "the extent to which the economic activity of a region is distributed among a number of categories" [19, p. 22]. This study has approached industrial diversification in terms of balanced employment across industry classes.

In the present study, Shannon's entropy function is used as a measure of economic diversity. Entropy as a measure of disorder, uncertainty, or homogeneity has been used to analyze many different phenomena. In the physical sciences, it has been used to measure the irreversible increase of "unavailable energy." In the biological and behavioral sciences, entropy has been used as a measure of organization. In communication theory, it quantifies the degree of uncertainty in a system [24].

The entropy measure has been invoked in empirical studies in economics as well as management, marketing, finance, and accounting [2, 7, 8, 9, 13, 14, 18, 21, 25, 26].

Entropy has also been used to measure employment diversity [1, 5, 6, 10]. The entropy method measures diversity of a region against a uniform distribution of employment where the norm is equiproportional employment in all industrial sectors. As it is applied to the region estimate of employment data, the entropy measure of industrial diversity \(D(E_1, E_2, ..., E_n)\) is defined as follows: